NAME _____ CLASS _____ DATE _____

# Reteaching

## 3.2 Solving Systems by Elimination

**Use elimination to solve each system of equations. Check your solution.**

**1.** $\begin{cases} x - y = -3 \\ x + y = 5 \end{cases}$ (1, 4)

$2x = 2$

$x = 1$

$1 + y = 5$

$y = 4$

**2.** $\begin{cases} x + 3y = 6 \\ x - y = 2 \end{cases}$ (3, 1)

$x + 3y = 6$

$3x - 3y = 6$

$4x = 12$

$x = 3$

$3 - y = 2$

$y = 1$

**3.** $\begin{cases} 7x - 3y = 32 \\ 2x + y = 11 \end{cases}$ (5, 1)

$7x - 3y = 32$

$6x + 3y = 33$

$13x = 65$

$x = 5$

$2(5) + y = 11$

$10 + y = 11$

$y = 1$

**4.** $\begin{cases} x + 4y = 8 \\ -2x + 5y = 23 \end{cases}$ (−4, 3)

$2x + 8y = 16$

$-2x + 5y = 23$

$13y = 39$

$y = 3$

$x + 4(3) = 8$

$x + 12 = 8$

$x = -4$

**5.** $\begin{cases} 2x - 5y = 11 \\ -x + 3y = -7 \end{cases}$ (−2, −3)

$2x - 5y = 11$

$-2x + 6y = -14$

$y = -3$

$-x + 3(-3) = -7$

$-x - 9 = -7$

$-x = 2$

$x = -2$

**6.** $\begin{cases} 3x - 2y = -4 \\ 4x + 3y = -5 \end{cases}$ $\left(-\frac{22}{17}, \frac{1}{17}\right)$

$-12x + 8y = 16$

$12x + 9y = -15$

$17y = 1$

$y = \frac{1}{17}$

$3x - 2\left(\frac{1}{17}\right) = -4$

$17\left(3x - \frac{2}{17}\right) = (-4)17$

$51x - 2 = -68$

$\frac{51x}{51} = \frac{-66}{51}$

$x = -\frac{22}{17}$

7. $2\begin{cases} 3x - 4y = 7 \\ -6x + y = -7 \end{cases}$ $(1, -1)$

$6x - 8y = 14$
$-6x + y = -7$
$-7y = 7$
$y = -1$
$-6x - 1 = -7$
$-6x = -6$
$x = 1$

8. $-2\begin{cases} 8x + 5y = -28 \\ 5 \\ -3x + 2y = -5 \end{cases}$ $(-1, -4)$

$-16x - 10y = 56$
$-15x + 10y = -25$
$-31x = 31$
$x = -1$
$-3(-1) + 2y = -5$
$3 + 2y = -5$
$2y = -8$
$y = -4$

**Classify each system as consistent or inconsistent, independent or dependent. If the system is consistent, find the solution.**

9. $\begin{cases} x + 7y = 13 \\ -x - 7y = -7 \end{cases}$ INCONSISTENT

$0 = 6$

10. $-5\begin{cases} 2x - y = 18 \\ 10x - 5y = 90 \end{cases}$ CONSISTENT DEPENDENT

$-10x + 5y = -90$
$10x - 5y = 90$
$0 = 0$

11. $2\begin{cases} 2x + 7y = -4 \\ -x - 8y = 2 \end{cases}$ $(-2, 0)$

$2x + 7y = -4$
$-2x - 16y = 4$
$-9y = 0$
$y = 0$
$2x + 7(0) = -4$
$2x = -4$
$x = -2$

CONSISTENT
INDEPENDENT

12. $5\begin{cases} x + y = 1 \\ x - 5y = -23 \end{cases}$ $(-3, 4)$

$5x + 5y = 5$
$x - 5y = -23$
$6x = -18$
$x = -3$
$-3 + y = 1$
$y = 4$

CONSISTENT
INDEPENDENT

**13.** $\begin{cases} 4x + 3y = 15 \\ 12x + 9y = 36 \end{cases}$ INCONSISTENT

$-12x - 9y = -45$

$12x + 9y = 36$

$0 = -9$

**14.** $\begin{cases} 2x - 7y = -1 \\ 6x - 21y = -3 \end{cases}$ CONSISTENT DEPENDENT

$-6x + 21y = 3$

$6x - 21y = -3$

$0 = 0$

**15.** $\begin{cases} 3x - 5y = 16 \\ -x + 4y = -10 \end{cases}$ $(2, -2)$

$3x - 5y = 16$

$-3x + 12y = -30$

$7y = -14$

$y = -2$

$-x + 4(-2) = -10$

$-x - 8 = -10$

$-x = -2$

$x = 2$

**16.** $\begin{cases} 7x + 14y = 21 \\ x + 2y = 3 \end{cases}$ CONSISTENT DEPENDENT

$7x + 14y = 21$

$-7x - 14y = -21$

$0 = 0$

NAME _____ CLASS _____ DATE _____

# Practice

## 3.2 Solving Systems by Elimination

**Use elimination to solve each system of equations. Check your solution.**

1. $\begin{cases} -2x + 9y = -13 \\ 6x - 3y = 15 \end{cases}$

$-6x + 27y = -39$
$6x - 3y = 15$
$24y = -24$
$y = -1$
$6x - 3(-1) = 15$
$6x + 3 = 15$
$6x = 12$
$x = 2$
$(2, -1)$

2. $\begin{cases} \frac{2}{3}x - 3y = \frac{1}{5} \\ 2x - 9y = 4 \end{cases}$ $\cdot 15$

$10x - 45y = 3$
$-2x - 9y = 4$
$10x - 45y = 3$
$-10x + 45y = -20$
$0 = -17$
INCONSISTENT

3. $\begin{cases} 7y - x = 8 \\ x - y = 4 \end{cases}$

$6y = 12$
$y = 2$
$x = 6$
$(6, 2)$

4. $\begin{cases} 4x + y = 12 \\ 3x + \frac{1}{4}y = 9 \end{cases}$

$(3, 0)$

5. $\begin{cases} 5x + 9y = -7 \\ 2x + 3y = -1 \end{cases}$ $\cdot -3$

$5x + 9y = -7$
$-6x - 9y = 3$
$-x = -4$
$x = 4$
$5(4) + 9y = -7$
$20 + 9y = -7$
$9y = -27$
$y = -3$
$(4, -3)$

6. $\begin{cases} \frac{1}{2}x + y = 22 \\ 2x + 4y = 11 \end{cases}$

INCONSISTENT

7. $\begin{cases} \frac{2}{3}x - y = -2 \\ 3x + 2y = -35 \end{cases}$

$(-9, -4)$

8. $\begin{cases} 6x - y = 26 \\ 3x - \frac{1}{2}y = 13 \end{cases}$

INCONSISTENT

9. $\begin{cases} \frac{1}{2}x + \frac{3}{4}y = 10 \\ 2x - y = 8 \end{cases}$

$(8, 8)$

10. $\begin{cases} x - 9y = -13 \\ 2x + y = -7 \end{cases}$ (multiply by $-2$)

$-2x + 18y = 26$

$2x + y = -7$

$19y = 19$

$y = 1$

$x = -4$

$(-4, 1)$

11. $\begin{cases} 13x + 7y = 19 \\ 9x - 2y = 20 \end{cases}$ (multiply by $2$ and $7$)

$26x + 14y = 38$

$63x - 14y = 140$

$89x = 178$

$x = 2$

$y = -1$

$(2, -1)$

12. $\begin{cases} 5x + 2y = -9 \\ y - 3x = 12 \end{cases}$

$(-3, 3)$

13. $\begin{cases} 11x - 4y = 19 \\ 3x - 2y = 7 \end{cases}$ (multiply by $-2$)

$11x - 4y = 19$

$-6x + 4y = -14$

$5x = 5$

$x = 1$

$y = -2$

$(1, -2)$

14. $\begin{cases} 3x - 2y = 31 \\ 3x + 2y = -1 \end{cases}$ (multiply by $-1$)

$-3x + 2y = -31$

$3x + 2y = -1$

$4y = -32$

$y = -8$

$6x = 30$

$x = 5$

$3x - 2(-8) = 31$

$3x + 16 = 31$

$3x = 15$

$x = 5$

$(5, -8)$

15. $\begin{cases} 3x + 5y = 4 \\ 5x + 7y = 6 \end{cases}$ (multiply by $5$ and $-3$)

$15x + 25y = 20$

$-15x - 21y = -18$

$4y = 2$

$y = \frac{1}{2}$

$3x + 5\left(\frac{1}{2}\right) = 4$

$3x + \frac{5}{2} = 4$

$3x = \frac{3}{2}$

$x = \frac{1}{2}$

$\left(\frac{1}{2}, \frac{1}{2}\right)$

**Use Substitution to solve each system of linear equations. Check your solution.**

16. $\begin{cases} y = 5x + 2 \\ y = 2x + 5 \end{cases}$

$2x + 5 = 5x + 2$

$3 = 3x$

$x = 1$

$y = 7$

$(1, 7)$

17. $\begin{cases} y = 6x \\ 2x + 5y = 16 \end{cases}$

$2x + 5(6x) = 16$

$2x + 30x = 16$

$32x = 16$

$x = \frac{1}{2}$

$y = 3$

$\left(\frac{1}{2}, 3\right)$

18. $\begin{cases} 4x + y = 9 \\ 2y = -8x + 18 \end{cases}$

$y = -4x + 9$

$2(-4x + 9) = -8x + 18$

$-8x + 18 = -8x + 18$

$0 = 0$

CONSISTENT
DEPENDENT

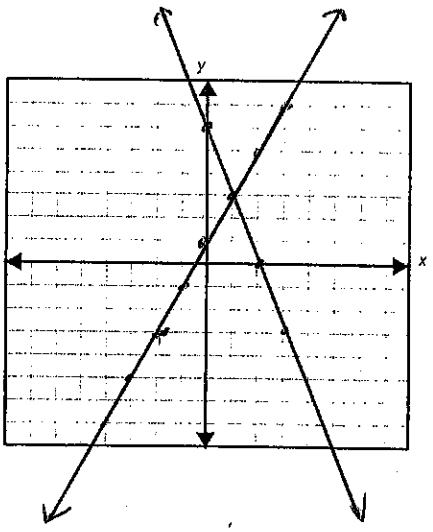
Review: Systems of Equations

Name_____
Date _____
Period_____

Use the graphing method to solve.

1) $\begin{cases} 2x - y = -1 \\ 3x + y = 6 \end{cases}$ $y = 2x+1$ $y = -3x+6$

(1, 3)




Use the substitution method.

2) $\begin{cases} x + 2y = 7 \\ 2x - y = 4 \end{cases}$ $\Rightarrow x = -2y + 7$

$2(-2y+7) - y = 4$

$-4y + 14 - y = 4$

$-5y = -10$

$y = 2$

$x = -2(2) + 7$

$x = 3$

(3, 2)

Use the elimination method to solve the system. Show all work.

3) $\begin{cases} 4a - 5b = 10 \\ 2a - 5b = 0 \end{cases}$ (5, 2)

$-2(2a - 5b = 0)$

$4a - 5b = 10$

$-4a + 10b = 0$

$5b = 10$

$b = 2$

$a = 5$

4) $\begin{cases} 2b = 2a + b - 4 \\ 3a = 3b - a + 2 \end{cases}$ (5, 6)

$2(-2a + b = -4)$

$4a - 3b = 2$

$-4a + 2b = -8$

$4a - 3b = 2$

$-b = -6$

$b = 6$

$a = 5$

5) $\begin{cases} 2m+3n=6 \\ -2(m+2n=10) \end{cases}$ $(-18,14)$

$2m+3n=6$
$-2m-4n=-20$
$-n=-14$
$n=14$
$m=-18$

6) $\begin{cases} 2x-y=8 \\ -2(x-8y=4) \end{cases}$ $(4,0)$

$2x-y=8$
$-2x+16y=-8$
$15y=0$
$y=0$
$x=4$

7) $\begin{cases} 3x+y=6 \\ 2x-y=-1 \end{cases}$ $(1,3)$

$5x=5$
$x=1$
$y=3$

8) $\begin{cases} 5p+12q=13 \\ -3(3p+4q=3) \end{cases}$ $\left(-1,\frac{3}{2}\right)$

$5p+12q=13$
$-9p-12q=-9$
$-4p=4$
$p=-1$
$3(-1)+4q=3$
$-3+4q=3$
$4q=6$
$q=\frac{3}{2}$

Choose your method to solve.

9) $\begin{cases} x-3y=-5 \\ 2x-5y=-9 \end{cases}$ $\Rightarrow x=3y-5$

$2(3y-5)-5y=-9$
$6y-10-5y=-9$
$y-10=-9$
$y=1$
$x=-2$

$(-2,1)$

10) $\begin{cases} 2x-y=2 \\ x=\frac{2}{3}y \end{cases}$ $(4,6)$

$2\left(\frac{2}{3}y\right)-y=2$
$3\left(\frac{4}{3}y-y\right)=(2)3$
$4y-3y=6$
$y=6$
$x=4$